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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,368	03/29/2004	Shaun Kazuo Wakumoto	200100254-1	5245
22879 7590 04/15/2008 HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400				
EXAMINER				
WONG, WARNER				
ART UNIT		PAPER NUMBER		
2616				
NOTIFICATION DATE		DELIVERY MODE		
04/15/2008		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/812,368

Applicant(s)

WAKUMOTO ET AL.

Examiner

WARNER WONG

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claim 19 is objected to because of the following informalities: On line 2, the limitation "a threshold" appears to have its antecedent basis in claim 18, line 2. It should be corrected as "the threshold".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4 and 7-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soloway (US 2003/0165137) in view of Chiu (US 2002/0186658).

Regarding claims 1, 12 & 16, Soloway describes a method in a packet switch apparatus within a switching mesh of handling oversubscribed ports between switches (abstract, move data flows from congested links to lightly load links), comprising:

a plurality of ports (fig. 2 & para. 11, switch comprising plurality of ports 130-140);

a switch controller coupled to a plurality of ports (fig. 2, switch processor);

wherein the switch uses procedure in memory (fig. 2, memory) for:

detecting an oversubscribed port at a detecting switch (fig. 4 para. 40, each of the possible congested links 330-370 corresponds to a GL port 110);

selecting a set of paths exiting at the oversubscribed port for retagging (para. 40-42, determining for each data flow (set of paths) which goes to the congested link with corresponding port (oversubscribed port) to change its routing (retagging));

retagging the received packets with a tag associated with a detour path (para. 34 & 40, determining a exit port corresponding to non-congested link).

Soloway describes adjusting the routing tables to move data flows (para. 40), but fails to describe:

invalidating tags for the set of paths;

receiving packets with the invalidated tags;

Chiu describes a method of handling congestion using MPLS, suggesting:

invalidating tags for the set of paths, and receiving packets with the invalidated tags (para. 25 & 29, routes are setup such that upon detecting primary LSPs labels (invalid tags) in a receiving packet, it will be re-labeled (re-tagged) with an alternate LSP label for the alternate path).

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to describe the invalidating of tags and receiving packets with invalidated tags as described by Chiu for the switching network of Soloway.

The motivation for combining the teachings is that by using MPLS for the selective traffic offloading, traffic is rapidly redistributed for better link utilization (Chiu, para. 6)

Regarding claims 2 and 13, Soloway further describes:

determining the detour path from the detecting switch to a destination switch for the set of paths (fig. 1 or 4, determining non-congested link (detour path) from switch 0 (detecting switch) to switch 2 (destination switch)).

Regarding claims 3 and 14, Soloway further describes:

comprising informing an owner switch of the set of paths that the paths are to be retagged by the detecting switch (fig. 4, switch 300 (owner switch) determines (is informed) the flows (paths) to be retagged).

Regarding claim 4, Soloway further describes:

more than one owner switch is so informed (para. 45 & 48, FSPF protocol which is being used for congestion detection by the network switches informs both ends of a switch pair (more than one owner switch), see fig. 4, switch pair 300 & 310).

Regarding claim 7, Soloway further describes:

the detecting switch is different from an owner switch of the set of paths (fig. 4, switch 300 (detecting switch) is different from switch 310 (owner switch) in the set of links 330-370 (paths)).

Regarding claim 8, Soloway further describes:

the detecting switch comprises a same switch as an owner switch of the set of paths (fig. 4, switch 300 (detecting switch) is also the owner switch)).

Regarding claim 9, Soloway further describes: wherein the set of paths includes at least one path (fig. 4, links 330-370 (paths)).

Regarding claim 10, Soloway describes: the switches are part of a switching mesh (the switching network 10 can be of a mesh topology of fig. 6c).

Regarding claims 11 and 15, Soloway describes: a tag for a path comprises an owner switch identifier, a destination switch identifier, and a path identifier (para. 27, the standardized fibre channel frame header format comprising a S_ID (owner switch ID) and a D_ID (destination switch ID – see Rickard, US 5,588,000 fig. 1 & col. 1, lines 27-30, herein cited but not used as a reference for the format of a fiber channel frame's with header fields in detail).

Soloway fails to describe that the tag comprises a path identifier.

Chiu describes the incorporation of MPLS protocol scheme comprising a label for each frame (path identifier).

Regarding claim 17, Soloway and Chiu combined further suggest:

a switch detecting an oversubscribed port is configured to determine a number of path tags associated with the oversubscribed port and to operate in at least two modes depending on the number of associated path tags (para. 45 & 57, load balancing of a congested link connected to a corresponding port equates to determining the number of flows connected to such congested link, each flow has its identifier (path tag). The number of flows decides one of many different allocations to load balancing (modes)).

Regarding claim 18, Soloway and Chiu combined further suggest:

if the number of associated path tags is larger than a threshold, then a first mode is used where some of the associated path tags are retagged by the detecting switch to a detour path tag, and the owner switch of those retagged paths are informed that those paths are no longer being used (Soloway, para. 50, if loading (i.e. number of flows each comprising tags) is greater than first threshold, then the (owner) switch instructs

(informs) itself to perform load balancing (first mode), retagging flows with their corresponding new links/paths);

Regarding claim 19, Soloway and Chiu combined further suggest:

if the number of associated path tags is smaller than a threshold, then a second mode is used without retagging by the detecting switch (Soloway, para. 50, no load-balancing (second mode) is performed if number of flows to a particular link consisting a port < first congestion threshold).

Regarding claim 20, Soloway and Chiu combine further suggest:

in the second mode, a set of at least one path tag is chosen, and the owner switch of the chosen tags is (are) informed of the oversubscribed port (Soloway, para. 50, when congestion < first congestion threshold, yielding no load-balancing (second mode), the switch instructs (informs) itself to use the xmt_port for the original forwarding link (one path tag)).

3. Claims 5-6 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soloway in view of Chiu as applied to claims 3 and 20 above, and further in view of Vasseur (US 2005/0117512).

Regarding claim 5, Soloway describes moving at least some flows associated with the set of links between switches (para. 40), but fails to explicitly describe that the data flows having MAC addresses.

Vasseur describes: congestion rerouting where data traffic are of Ethernet (i.e. comprising MAC addresses) (para. 45 & 47)).

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to describe congestion rerouting of data traffic with MAC addresses as in Vasseur for the combined teachings of Soloway and Chiu.

The motivation for combining the teachings is that it provides a further economy in signaling (Vasseur, para. 7 & 45).

Regarding claim 6, Soloway suggests moving some or all flows associated with the set of links between switches (para. 40), but fails to explicitly describe that the data flows having MAC addresses.

Vasseur describes: congestion rerouting where data traffic are of Ethernet (i.e. comprising MAC addresses) (para. 45 & 47)).

Regarding claim 21, Soloway and Chiu combined describes an informed owner switch reassigns at least one data flow associated with the chosen tag(s) to another, less costly path tag (Soloway, para. 50), but fails to explicitly describe that the data flows have MAC addresses.

Vasseur describes: congestion rerouting where data traffic are of Ethernet (i.e. comprising MAC addresses) (para. 45 & 47)).

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Walsh (US 7,209,440) describing method for preventing blocking in a QoS switch, Ji (US 6,831,895) describing method for relieving congestion in packet network and Wang (US 2004/0196787), Mayhew (US 2005/0195845) describing look

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ahead congestion management, Sokhin (US 2002/0089934) describing method for identifying congested links in network and Chen (US 7,092,387) describing method for easing flow congestion.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WARNER WONG whose telephone number is (571)272-8197. The examiner can normally be reached on 6:30AM - 3:00PM, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao can be reached on 571-272-3182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Warner Wong
Examiner
Art Unit 2616

/W. W./
Examiner, Art Unit 2616

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/Kwang B. Yao/

Supervisory Patent Examiner, Art Unit 2616